# Synthesis of an Anion-Excha n g e Resin from Methylvinylketone

AUTHOR(S):

Suda, Hiroshi; Inoue, Susumu; Oda, Ryohei

CITATION:

Suda, Hiroshi ...[et al]. Synthesis of an Anion-Excha n g e Resin from Methylvinylketone. Bulletin of the Institute for Chemical Research, Kyoto University 1958, 35(5-6): 160-160

ISSUE DATE:

1958-03-30

URL:

http://hdl.handle.net/2433/75600

and the average polymerization degree is 19.

The polymer is soluble in the most solvents, but insoluble in petroleum ether and water. It is easily decomposed by acid, and yields acetaldehyde. This fact points out that the polymer is a polyacetal.

## Synthesis of an Anion-Exchange Resin from Methylvinylketone

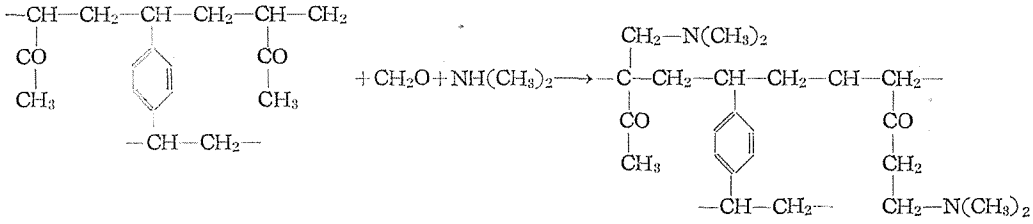
Hiroshi SUDA, Susumu INOUE and Ryohei ODA

(Oda Laboratory)

*J. Chem. Soc. Japan, Ind. Chem. Sec.* (*Kōgyo Kagaku Zasshi*), **60**, 508 (1957)

Polymethylvinylketone has the active methylene and methyl groups adjacent to its carbonyl groups. Paying attention to these groups, the authors attempted the synthesis of an anion-exchange resin by the Mannich reaction on methylvinylketone-divinylbenzene copolymer.

The starting copolymer was prepared by the bulk polymerization of methyl vinyl ketone and divinylbenzene (molar ratio 95 : 5) using azobisisobutyronitrile as initiator. The above polymer was suspended in dioxane, formaldehyde and dimethylamine were added, and the mixture was refluxed for ca. 25 hrs. The structure of the obtained resin could be written as follows.



The nitrogen content of this resin was found as 8.24%, i.e., the degree of aminomethylation was 62%. The ionexchage capacity was measured by the usual method. It was 5.66 m. eq./g. of dried resin, while the theoretical value calculated from the nitrogen content was 5.88 m. eq./g.

In order to quarternize the amino group, the aminated resin was treated with dimethyl sulfate or methyl iodide in dioxane for ca. 12 hrs. at 40-50°C and then allowed to stand room temperature for 50 hrs. Only 23% of total amino groups was quarternized. The ability of decomposing neutral salt was 1.15 m. eq./g. The difficulty in quarternization may be due to the deamination and intra- or inter-molecular recombination.